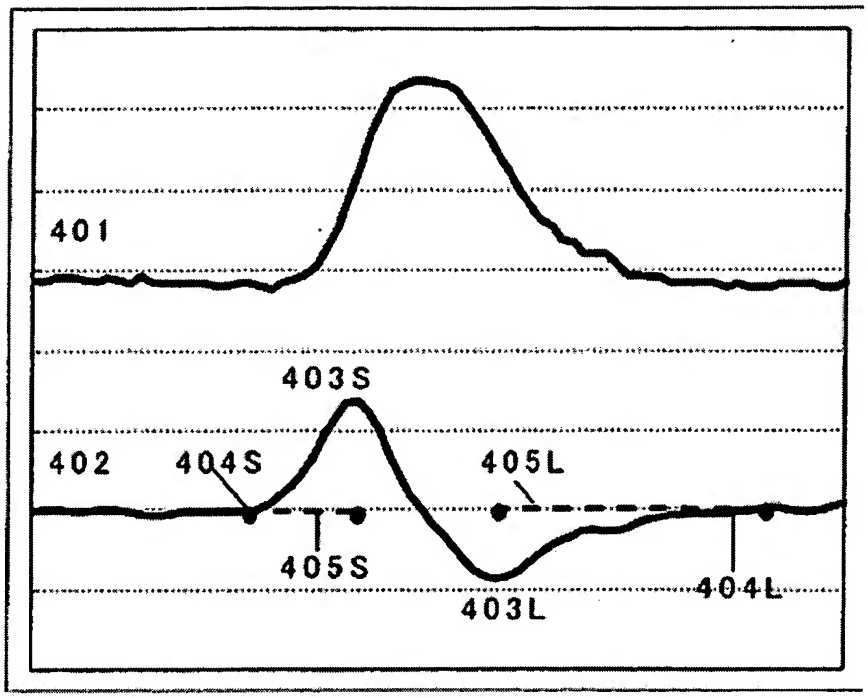
REMARKS

Claims 1, 2, 3 and 10-11 have been amended. Claims 1-11 remain pending. Applicants reserve the right to pursue the original and other claims in this and other applications. Reconsideration and withdrawal of all outstanding rejections are respectfully requested in light of the foregoing amendments and the following remarks.

Claims 1-11 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,969,273 to Archie ("Archie"). The rejection is traversed.

The present invention relates to methods and apparatus for determining the concavity and/or convexity of line and space patterns formed on a sample. More specifically, the claimed invention, as embodied by claims 1-11 is characterized in that a sample concavity/convexity determination is made by forming and comparing parts of a derivative waveform that is based on a profile waveform. With reference to FIG. 4 of the application (reproduced below for the Examiner's convenience), a derivative waveform 402 is formed based on a profile waveform 401. The claimed invention further comprises comparing a first distance 405L on a first side of the formed waveform with a second distance 405S on a second side of the waveform, in a direction along a baseline. The first and second distances (405L and 405S) represent the interval between peaks (i.e., 403L and 403S) and positions where the derivative waveform intersects the baseline or converges along the baseline (i.e., 404L and 404S, respectively) in the derivative waveform.



Archie, on the other hand, relates to determining the critical dimensions of a featured formed on a substrate using, for example, the edge width of the feature. In the passage referred to in the Office Action (i.e., col. 6, lines 9-33), Archie discloses: two top points 702, 705 that are located near a line edge; a steeply sloped region on one side of the two top points; a greater slope on the other side of the two top points; two bottom points 701 and 706; inner points 703, 704 that are the starting points of the decreasing slope from a maximum value; and that inner points (703, 704) are determined by computing the derivative of the waveform 700.

While the Office Action states that the concave/convex portions are defined by the foregoing description in Archie, the reference provides no teaching or suggestion of comparing a first distance and a second distance from peaks in the derivative waveform to positions where the derivative waveform intersects or converges along the baseline in a derivative waveform. Nor does Archie teach or

suggest using that comparison to determine a convexity/concavity of a sample, as in the claimed invention.

In other words, Archie provides no teaching or suggestion to apply the concept of "comparing a first distance, along a baseline, between a peak top of a first side of the derivative waveform and a position where the derivative waveform converges, with a second distance, along the baseline, between a peak top of a second side of the derivative waveform and a position where the derivative waveform converges" and utilizing that comparison in a concavity/convexity determination, as in the claimed invention.

Further, although the Office Action suggests that it might be possible to define the concave/convex portions of the Archie waveforms by merely looking at the figures, this is only true for very simple profiles. When the contrast between a line and space is low, however, as discussed in the present application, their difference is small even when viewed in the form of an SEM image or a line profile, thus making it difficult to determine the concave/convex portions. In view of such problems, the present invention proposes a technique involving the comparison of a first distance and a second distance in a derivative waveform, which is neither taught nor suggested by Archie.

The Archie disclosure is based on the presumption that concave/convex portions are known in advance, and provides no teaching about how to distinguish a concave portion from a convex portion in a sample in which such distinction is difficult to make. For at least the foregoing reasons, Archie does not anticipate or render obvious the claimed invention, as recited in claims 1-11.

In view of the above amendment, Applicants believe the pending application is in condition for allowance. Favorable action on the application, including claims 1-11 is solicited.

Dated: August 23, 2006

Respectfully submitted,

By _____

Mark J. Thronson
Registration No.: 33,082
Megan S. Woodworth
Registration No.: 53,655
DICKSTEIN SHAPIRO LLP
1825 Eye Street NW
Washington, DC 20006-5403
(202) 420-2200
Attorneys for Applicant